

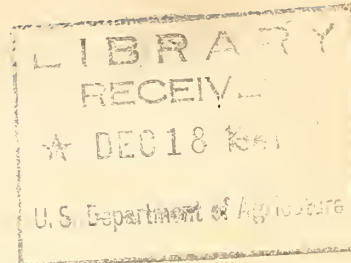
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LOG GRADE OF TIMBER IN EASTERN OHIO:

I. EASTERN WHITE PINE ON MOHICAN RIVER GORGE, HOLMES COUNTY, OHIO

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Although sawmill operators in the Central States Region have a general knowledge of the quality of the region's remaining standing timber, usually they are not aware of the variation in log grade with variation in tree diameter. The relation of tree diameter to log grade is an important consideration in judging whether manufacture of a given lot of timber is likely to yield a profit. High-grade material in sufficient volume commands a market and a price, but low-grade logs have low value and are a drag on the market. Also, the quality of the material obtainable from trees of a given species in a given locality has an important bearing on the degree to which the species should be favored in the handling of local woodlands. For these reasons, any information on log quality and grade for the timber in this region has distinct value. In connection with checking a volume table intended for use in the Ohio Forest Survey, data were recently obtained on the log grades of some white pine timber near Loudonville, Holmes County, Ohio, that afford an indication of the variation of log grade with diameter for this species.

Eastern white pine (*Pinus strobus*) occurs in scattered localities in the eastern half of Ohio, with hardwoods and occasionally hemlock as associates, on hilly to steep land usually having thin sandy soils overlying sandstone. These stands form a portion of the southern fringe of the conifer forest of the Lake States. Perhaps the most extensive white pine stands in Ohio are those in the gorges and the immediate vicinity of Clear Fork and the Mohican River, which extend from the neighborhood of Perrysville, in southern Ashland County, southward along the boundary of Knox and Holmes Counties to the neighborhood of Brinkhaven. In this locality black, scarlet, and chestnut oaks and shagbark hickory grow commonly on the ridge tops. On north-facing slopes the forest is composed largely of white and red oak, sugar maple, red maple, beech, white ash, yellowpoplar, elms, and black walnut and, frequently, hemlock. White pine appears most frequently on south- and west-facing slopes, but is not limited to them. It occurs both as single trees in mixture with hardwoods and as almost pure stands of very limited extent. Young growth of white pine occurs somewhat erratically. Protection from fire is necessary to maintain white pine as a component in the stands. Cutting during the past century, sometimes repeated, appears to have altered the distribution of this species very little. The lumber probably does not enter the market except locally as a custom-sawn product for farm or town use.

In the Loudonville locality, the stands near the ridge tops are of an even-aged oak-pine type, containing black and scarlet oaks and some chestnut oak and shagbark hickory in mixture with the white pine. On such sites chestnut formerly was common. On lower slopes the associates of white pine include red oak, white oak, black gum, red maple, and slippery elm. The logs in 104 white pines on west-facing slopes were graded by James W. Girard, Assistant Director of the Nation-wide Forest Survey. The log lengths in these white pine trees varied from 12 to 16 feet, depending on the occurrence of limbs, sweep, or stubs and their effect on log grade. Log grading was based on minimum diameter, proportion of clear surface on the three visible faces, and expected size of clear cuttings as governed by distribution of limbs, stubs, and other defects. The volume and log-grade data obtained are summarized in table 1.

Table 1.--Log grades and gross volume, equivalent to green-lumber mill tally, of eastern white pine trees of different diameters, 1/Michigan River Gorge, Holmes County, Ohio

D. b. h. class (inches)	Basis in trees	Average tree		Logs (12- to 16-foot), by grade			Distribution of gross volume by log grade, and its total			
		Merchant- able length	Volume	# 1	# 2	# 3 ^{2/}	# 1	# 2	# 3	
	<u>Number</u>	<u>Ft.</u>	<u>Bd. ft.</u>	<u>Number</u>	<u>Number</u>	<u>Number</u>	<u>Percent</u>	<u>Percent</u>	<u>Percent</u>	
10	33	22	45	None	2	54)			
12	27	43	109	5	18	57)	6	22	72
14	19	51	175	16	15	37)			
16	20	57	270	13	20	45)	30	30	40
18	4	66	331	3	5	9)			
20	1	64	473	1	1	2)	30	36	34
All classes	104	-	-	38	61	204		22.8	28.4	48.8
								<u>Bd. ft.</u>	<u>Bd. ft.</u>	<u>Bd. ft.</u>
								3,465	4,312	7,373

1/ These trees possess higher form and greater merchantable length than those in most other parts of Ohio.

2/ Two logs of this grade were only 10 feet long.

Whereas 10-inch white pines have an average merchantable length of only 1.8 12-foot logs (22 feet), a 16-inch tree contains on the average 4.7 such logs and a 20-inch tree contains 5.3. Although these data do not show it, white pines attain a diameter of 28 inches in this locality. The proportion of number 1 logs increases from none in 10-inch trees to about 30 percent in 18- and 20-inch trees. The proportion of number 3 (lowest-grade) logs drops from 72 percent for 10- and 12-inch trees to about 34 percent for 18- and 20-inch trees. Of the total volume of this sample, almost a quarter was contained in number 1 logs and half was contained in number 1 and 2 logs.

Thus, timber owners or millmen in this locality who cut 10-inch white pines obtain from them only small logs of the lowest grade, which yield undesirable low-value lumber, of the knotty common grade. Large-diameter trees, which contain a high proportion of number 1 logs, will yield some clear high-grade lumber, which will meet exacting requirements and may command a good local price. Plenty of common lumber will be available from the centers of the number 1 and number 2 logs and the yield of number 3 logs. Others have pointed out the financial loss in cutting small trees containing only low-grade logs and the increasing profit from selecting and cutting only large trees containing high-quality logs. In this case, data showing the profit and loss resulting from these practices are unavailable.

In table 1, two facts stand out:

1. It is shortsighted to sell or cut sound, thriftily growing 10- or 12-inch eastern white pine trees, which contain predominantly low-grade logs. Such logs command only a low price and yield only low-grade material. If the trees are sound, thrifty, and a good risk, they should be left to grow.

2. After the trees reach a diameter of about 18 inches their increase in merchantable length (in logs) apparently levels off but their volume continues to increase rapidly. If the trees have been well pruned, either by side crowding or artificially, they lay on high-quality wood. It appears to be good business to hold thrifty trees until they are 18 inches or more in diameter before cutting them.

